

WHAT IS CLAIMED IS:

1. An organic semiconductor device using an organic thin film transistor comprising:
a first electrode formed in contact with an insulated surface,
a first insulated film formed in contact with the first electrode,
a second insulated film formed in contact with the first insulated film, having an opening part at a position superimposed on the first electrode,
an organic semiconductor film formed in the opening part, and a second electrode and a third electrode formed in contact with the organic semiconductor film,
wherein the organic semiconductor film and the second insulated film form the same surface.
2. A device according to claim 1, wherein the organic semiconductor film is made of a soluble organic semiconductor material.
3. A device according to claim 1, wherein the organic semiconductor film has a film thickness thicker than that of the second insulated film.
4. A device according to claim 1, wherein the second electrode and the third electrode are made of the same metal having a large work function.
5. A device according to claim 4, wherein the second electrode and the third electrode comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel.
6. A device according to claim 1, wherein the organic semiconductor device is incorporated into one selected from the group consisting of a display device, a digital still camera, a laptop personal computer, a mobile computer, a portable image reproducing device comprising a recording medium, a goggle type display, a video camera and a portable phone.

7. An organic semiconductor device using an organic thin film transistor comprising:
a first electrode formed in contact with an insulated surface,
a first insulated film formed in contact with the first electrode,
a second insulated film formed in contact with the first insulated film, having an opening part at a position superimposed on the first electrode,
an organic semiconductor film formed in the opening part, and a second electrode and a third electrode formed in contact with the organic semiconductor film,
wherein the second electrode and the third electrode are formed without contact with each other.

8. A device according to claim 7, wherein the organic semiconductor film is made of a soluble organic semiconductor material.

9. A device according to claim 7, wherein the organic semiconductor film has a film thickness thicker than that of the second insulated film.

10. A device according to claim 7, wherein the second electrode and the third electrode are made of the same metal having a large work function.

11. A device according to claim 10, wherein the second electrode and the third electrode comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel.

12. A device according to claim 7, wherein the organic semiconductor device is incorporated into one selected from the group consisting of a display device, a digital still camera, a laptop personal computer, a mobile computer, a portable image reproducing device comprising a recording medium, a goggle type display, a video camera and a portable phone.

13. An organic semiconductor device using an organic thin film transistor comprising:
a first electrode formed in contact with an insulated surface,
a first insulated film formed in contact with the first electrode,
a second insulated film formed in contact with the first insulated film, having an opening part at a position superimposed on the first electrode,
an organic semiconductor film formed in the opening part, and
a second electrode and a third electrode formed in contact with the organic semiconductor film,
wherein the second insulated film has a tapered rim.

14. A device according to claim 13, wherein the organic semiconductor film is made of a soluble organic semiconductor material.

15. A device according to claim 13, wherein the organic semiconductor film has a film thickness thicker than that of the second insulated film.

16. A device according to claim 13, wherein the second electrode and the third electrode are made of the same metal having a large work function.

17. A device according to claim 15, wherein the second electrode and the third electrode comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel.

18. A device according to claim 13, wherein the organic semiconductor device is incorporated into one selected from the group consisting of a display device, a digital still camera, a laptop personal computer, a mobile computer, a portable image reproducing device comprising a recording medium, a goggle type display, a video camera and a portable phone.

19. An organic semiconductor device using an organic thin film transistor comprising:
a first electrode formed in contact with an insulated surface,
a first insulated film formed in contact with the first electrode,
a second insulated film formed in contact with the first insulated film, having an opening part at a position superimposed on the first electrode,
an organic semiconductor film formed in the opening part, and
a second electrode and a third electrode formed in contact with the organic semiconductor film,
wherein the organic semiconductor film is formed in contact with the first insulated film.

20. A device according to claim 19, wherein the organic semiconductor film is made of a soluble organic semiconductor material.

21. A device according to claim 19, wherein the organic semiconductor film has a film thickness thicker than that of the second insulated film.

22. A device according to claim 19, wherein the second electrode and the third electrode are made of the same metal having a large work function.

23. A device according to claim 22, wherein the second electrode and the third electrode comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel.

24. A device according to claim 19, wherein the organic semiconductor device is incorporated into one selected from the group consisting of a display device, a digital still camera, a laptop personal computer, a mobile computer, a portable image reproducing device comprising a recording medium, a goggle type display, a video camera and a portable phone

25. A semiconductor device comprising:

a gate electrode provided over a substrate;

a gate insulator comprising a first insulating film and a second insulating film, said first insulating film provided over said gate electrode, said second insulating film provided over said first insulating film, said second insulating film provided with an opening part at a position superimposed over said gate electrode;

a channel region provided over said gate electrode with said gate insulator therebetween, said channel region provided in an organic semiconductor film provided in said opening part;

a source electrode and a drain electrode provided in contact with said organic semiconductor film,

wherein said organic semiconductor film and said second insulating film form a same surface.

26. A device according to claim 25, wherein the source electrode and the drain electrode comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel.

27. A device according to claim 25, wherein said semiconductor device is incorporated into one selected from the group consisting of a display device, a digital still camera, a laptop personal computer, a mobile computer, a portable image reproducing device comprising a recording medium, a goggle type display, a video camera and a portable phone.

28. A semiconductor device comprising:

a gate electrode provided over a substrate;

a gate insulator comprising a first insulating film and a second insulating film, said first insulating film provided over said gate electrode, said second insulating film provided over said first insulating film, said second insulating film provided with an opening part at a position superimposed over said gate electrode;

a channel region provided over said gate electrode with said gate insulator therebetween, said channel region provided in an organic semiconductor film provided in said opening part;

a source electrode and a drain electrode provided in contact with said organic semiconductor film,

wherein a rim of said opening part is tapered.

29. A device according to claim 28, wherein the source electrode and the drain electrode comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel.

30. A device according to claim 28, wherein said semiconductor device is incorporated into one selected from the group consisting of a display device, a digital still camera, a laptop personal computer, a mobile computer, a portable image reproducing device comprising a recording medium, a goggle type display, a video camera and a portable phone.

31. A semiconductor device comprising:

a gate electrode provided over a substrate;

a gate insulator comprising a first insulating film and a second insulating film, said first insulating film provided over said gate electrode, said second insulating film provided over said first insulating film said second insulating film provided with an opening part at a position superimposed over said gate electrode;

a channel region provided over said gate electrode with said gate insulator therebetween, said channel region provided in an organic semiconductor film provided in said opening part;

a source electrode and a drain electrode provided in contact with said organic semiconductor film,

wherein said organic semiconductor film is provided in contact with said first insulating film.

32. A device according to claim 31, wherein the source electrode and the drain electrode comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel.

33. A device according to claim 31, wherein said semiconductor device is incorporated into one selected from the group consisting of a display device, a digital still camera, a laptop personal computer, a mobile computer, a portable image reproducing device comprising a recording medium, a goggle type display, a video camera and a portable phone.